Power Distribution

JELEC

INNOVATION AND **TECHNOLOGY**
DRIVING SIMPLICITY AND **EFFICIENCY**

Power Distribution

Engineering

Jelec has 20+ years in the oil & gas industry and our industry specific technology experience and expertise in drilling application enables us to understand the overall project requirements for the power and control deliverables. Jelec complete engineering solutions reduce operational costs, increase safety, enhance drilling and equipment optimization / performance.

Jelec's focus is on the manufacturing of custom-designed power delivery solutions including power distribution, automation & control system and power control room (PCR). This enables smooth integration between all aspects of a project (eliminiting finger pointing that comes from multi-supplier solution).

Jelec designing:

- New Technology that delivers increased automation
- Advanced & Smarter drilling solutions

Jelec continually pushes the safest, most efficient, and most reliable drilling solutions.

Generator Control

We are one of the noted names of the Oil & Gas industry that manufacture and supply Generator Control that meets the varied range of specifications to meet varied client needs. Highly modular, easy to operate, maintain, and install, these panels are manufactured in accordance with the industry norms.

The heart of our generator control is an integrated solution developed to cover all the control requirements of small to large generators. The system has the ability to protect and to automatically START/STOP the engine-generator set. The generator control can monitor critical engine functions such as oil pressure, coolant temperature, voltage, current, frequency, power factor and power flow. The generator control systems have built in displays so that an operator can check on the generators control parameters.

The Generator Control System contains:

- Digital Load Sharing Controller
- Automatic Voltage Regulator (AVR)
- Speed Governor
- Generator Protection
- Soft load shedding transfer
- Optimal tuning for drilling rig application

Power Management System

Jelec Power Management System ensures the best energy consumption in class for safest and most economic operation of the rig. Its task is to make sure that the electrical system is safe and efficient. If the power consumption is larger than the power production capacity, load shedding is used to avoid blackout. The power management will also guide the operator to select the optimal number of engines to be running depending on the operating conditions.

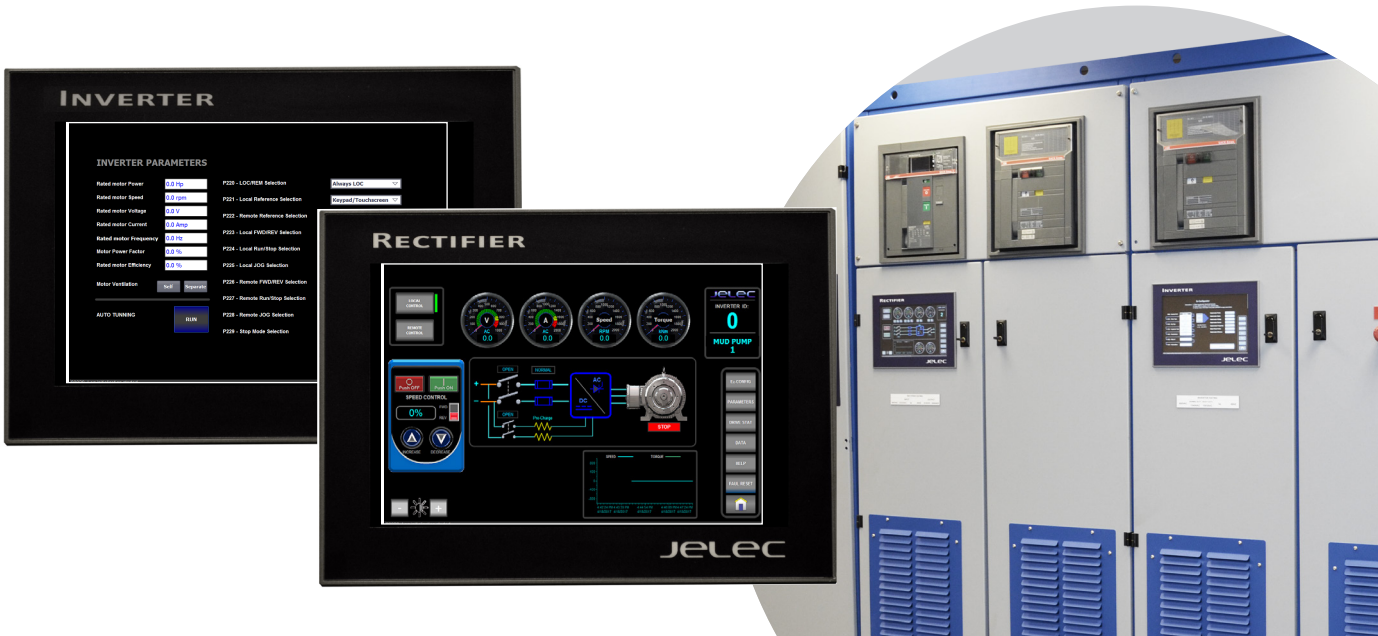
The power limit is a function embedded in the power management to allocate available power for drilling to ensure that important machinery is available and blackouts caused by drilling are avoided. In a power reduction scenario the power limit function ensures that the drawworks is the last to see the power reduction (drawworks are considered essential equipment and has highest priority) and the first to access power when it becomes available.

Variable Frequency Drives

We offer a compact designed and developed range of Variable Frequency Drive Systems with latest technology, high performance, and a user friendly concept. We have the experience and know how to provide you with the best drive for your application. The drive system is engineered utilizing a common DC bus design. Grouped drives are available for the most cost-efficient and functional drive system architecture.

The drive system utilizes a HMI touchscreen to simplify operations and offers the following benefits:

- Overall one-line diagram of power circuit with full diagnostics of all the components
- Local/Remote Control selection
- Meter Indication
- Easy Configuration of Drive
- Custom software functions to improve efficiency of operation
- Embedded Documentation Package



Motor Control Center / Control Panel

Jelec offers Motor Control Center (MCC) and control panels that meet your specifications. The control panels and MCC are customized to be easy to operate, maintain, and install, while incorporating intelligent devices. The intelligent devices are utilized to control & monitor motor operation, energy consumption, and power quality.

Major Benefits:

- Standard Industry Networks / Protocols
- Real-time monitoring
- Improve diagnostics
- Simplifies troubleshooting

Rig Energy Storage System

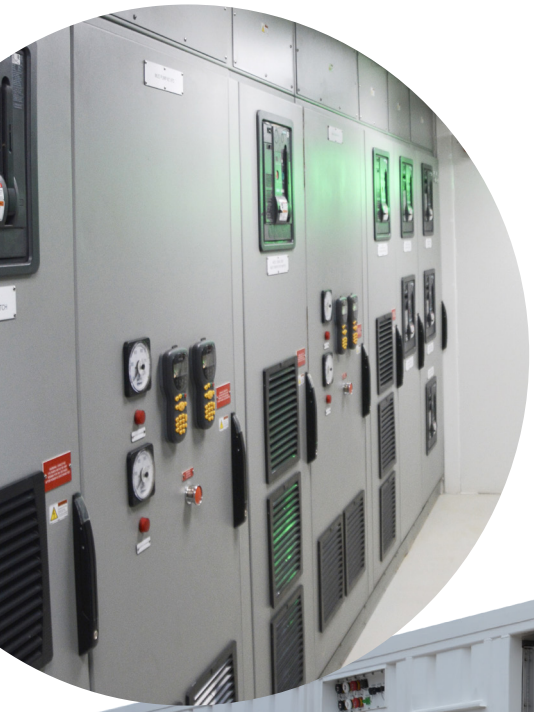
The purpose of the Rig Energy Storage System is to store energy from the drawworks motors during dynamic braking operations. Re-using the typically lost dynamic braking energy of the drawworks motors to reduce the amount of power losses, results in less energy waste, and making for a more environmentally friendly rig.

Because the energy is being stored, and not just instantaneously re-generated, the time where it is put back to contribution can be controlled. The regeneration phase can conveniently be timed to happen during the drawworks hoisting phase, which is one of the most demanding scenarios on a rig power system.
From the generator point of view, the cyclic load behavior of the drawworks is converted to a constant load. The operating point of the generators is thus steadier allowing them to perform at a higher level of efficiency.
Additionally, the power delivery from the energy storage can be instantly available (or close to) and the drawworks hoisting speed ramps do not need to be set according to the generators power delivery capability. This principle increases the performance of the drawworks and reduce tripping cycle times.

Since other consuming loads are present on the drawworks DC bus, a more advanced strategy is applied by Rig Energy Storage System; i.e. rather than loading the ultra-capacitors during drawworks lowering and unloading them during hoisting.
Rig Energy Storage System is actually driven by an energy management system to consider the “future fuel cost”, and, with a state of the art optimization algorithm, makes decision to run the generators at their most efficient point to improve fuel savings and reduce emissions.

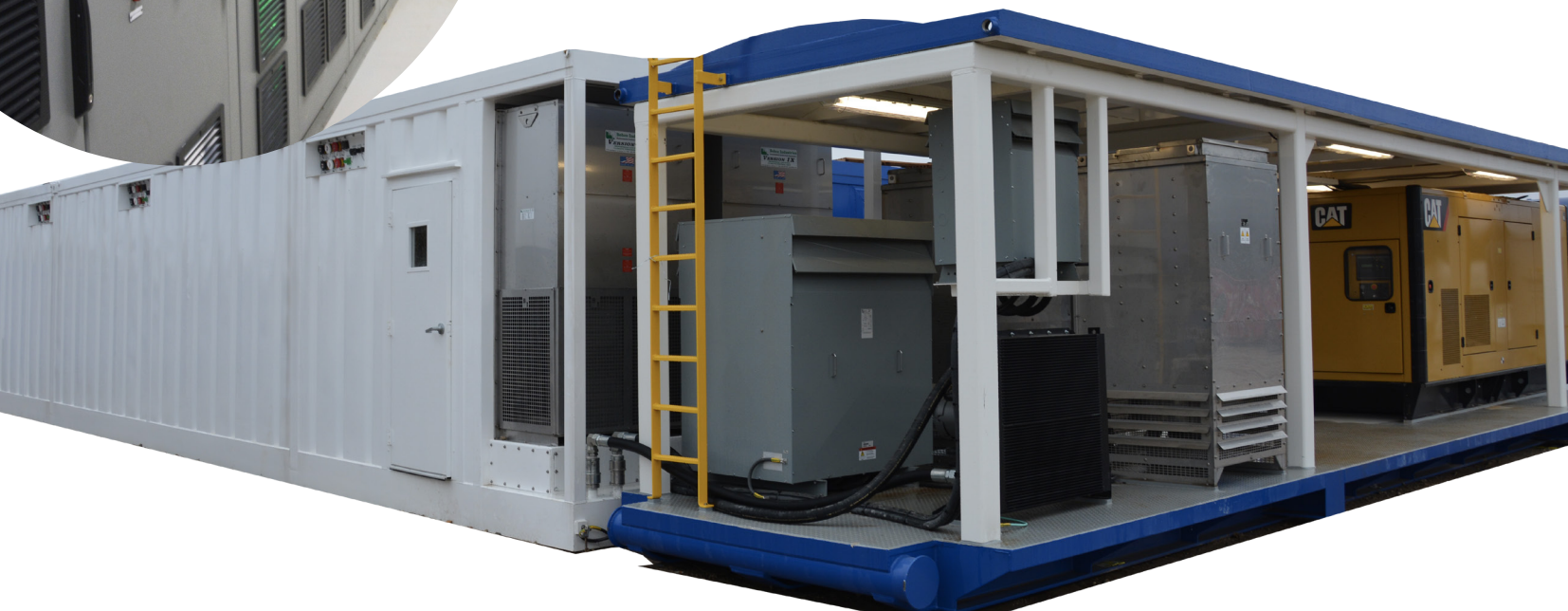
Power Control Room / Local Equipment Room (LER)

Jelec provides custom designed air conditioned Power Control Room solutions for drives, generator controls, motor control center, distribution panels, switchgear, transformers and automation panels. Our design is rugged and reliable while delivering the flexibility for portable operation.



Major Features:

- Crimp Walls
- Compact Size
- Modular Container
- Recessed Plug Panels
- Top lifted or skid mounted
- Walls, Celing and under skid insulation
- High vibration packaging for off road transport



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